THE MOTOR AGE

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LEADING CONTENTS

PAGE

Two-Stroke Gasolene Motors—Comment on their adaptability to vehicles. 573

Motor Racing and Motor Pacing—News of the sport at home and abroad. . . . 575

In Cleveland Trade Circles—Activity in the Ohio city. 577

Notes From Germany—Progress of automobilism in the fatherland. 579

PAGE

A Model Automobile Barn—An illustrated description of a modern stable. . . . 582

Weekly Patent Office Budget—An illustrated resume of the latest automobile patents. . 584

From the Four Winds—News of the motor world gathered from many sources. . . 591

News of the Motor Industry—An illustrated history of the week among the makers. . 593

TWO-STROKE GASOLINE MOTORS

Amongst the many methods which are now being introduced or experimented upon by those who are anxious to obtain a more perfect engine for motor-car propulsion, says the Automotor Journal, the two-stroke or "explosion-every-revolution" engine calls for a certain amount of attention. Far from being a novelty, engines of this type date back to an earlier period than the now almost universally-used four-stroke motors. As is generally known, all the earliest gas engines were constructed upon this two-stroke principle. That an enormous amount of inventive skill and constructional ability has been expended in this direction in the past is beyond question. That the four-stroke engine should have so successfully held its own, both during the period when it was a monopoly in this country and since the expiration of the patent rights upon it, would appear to show the futility of further work in the development of this, recently, almost abandoned type of motor, especially in view of the strenuous efforts which were naturally made to render it a commercial rival during the period when the "Otto" patent was in force.

In spite, however, of the apparent failure of these engines to prove their practical utility, they undoubtedly possess many attractive features, and it is probably not too much to say that they have

a certain fascination (either secret or expressed) for the majority of those who are interested in oil-engines. It should moreover, be borne in mind that experience has frequently shown cases in which an extremely small alteration in construction has entirely changed the aspects of a mechanical arrangement. Doubtful, therefore, as the chances of the two-stroke engine are for motor-car work, it is still worth while to consider the advantages which might be obtained by its use, and the difficulties which at present restrict its employment. The advisability of such a course is largely emphasized at the present time owing to the different working conditions which exist between a stationary engine and one which is used for locomotive purposes, and also owing to the obvious room for improvement which exists in all high-speed explosion engines.

Some of the advantages which are associated with these engines, in which the whole cycle of operations is performed in a single revolution of the crank-shaft, are reduction of vibration, reduced weight of flywheel, and increased ratio of output in size and weight of engine. Other advantages which are claimed for the majority of engines of this kind are cheapness of construction, fewness of working parts, and ability to run in either direction.

Taking these apparently useful features, and before considering the question in its entirety, we find that certain benefits would result from some of them in motor-car practice, but that the points mentioned have an exaggerated face value. Vibration is chiefly due to the explosions themselves, and is more particularly objectionable, when irregular firing takes place; it is not necessarily proportionate to the speed of the engine, the number of regular impulses per minute, or to the size of the engine, and hence, whichever type of engine is employed, it is almost equally necessary to balance the forces tending to set up vibration if any degree of perfection is to be obtained. The function of the flywheel is to perform the negative work during the cycle of the engine, and the greatest amount of negative work which has to be done is that of compressing the combustible mixture; this operation is equally necessary with either type of engine, and little real advantage is therefore gained in this direction unless the volume to be compressed is reduced. Regarding the question of relative output, present experience tends to prove that the four-stroke engine is superior; but as this is the really important question, we shall deal with it more fully presently. The claims to simplicity and cheapness are borne out in several of the two-stroke motors which have been made, and are chiefly due to the absence of any cams or of an exhaust valve. The remaining point above mentioned as a claim for these engines, their ability to run in either direction, is of very little practical importance, for motor cars, unless they were also self-starting; it would probably be more of an inconvenience than the opposite, because of the liability to start in the wrong direction.

The crux of the whole matter lies primarily in the relative output to size (and weight), and as to whether a two-stroke engine can ever give more power than one of the same size working upon the four-stroke cycle. This question resolves itself into a very simple form, and merely depends upon the natural limits to increased output which are found to exist with oil-engines generally. If these limits were the result of the maximum speed which the mechanisms will stand, and were therefore dependent upon material and lubrication, the two-stroke type of engine should undoubtedly give the higher results. If, on the other hand, the limit of rapidity at which the various operations, forming the cycle of all oil-gines, could be performed were arrived at before the mechanical limit were reached, then the advantages of the two-stroke engine in this respect would cease. The obvious deduction which is arrived at from this point of view is that the two-stroke engine can only support its claims of superiority if it can work equally satsatisfactorily and efficiently and develop the same power as a four-stroke machine when it is running at one-half the speed of the latter; it is needless to state that mechanical construction does not necessarily limit the speed of oil-engines, although it is true that the actual construction of various parts frequently does limit

the rapidity with which the engine can operate.

For the reasons given we come to the general conclusion that a certain engine might conceivably work on the two-stroke system at slightly more than one-half the speed at which it could work efficiently on the four-stroke cycle, and that its output might be somewhat higher. It is clear, however, that this amount of gain would only be secured if the mechanical parts happened to provide less resistance to the various functions, or if the relative times allowed for each operation of the cycle were more correctly proportioned to the relative periods required by each. It is obvious that a cycle in which the compression and explosion strokes were rapid and in which the induction and exhaust strokes were slow (or the inlet and exhaust ports very large), would enable a higher output to be obtained, provided that a quick-firing mixture were employed. Engines working on the four-stroke system essentially provide an equal period for each of the four operations.

It is impossible in this brief consideration of the subject to deal with anything like all the aspects of the case, and we cannot therefore touch upon the important bearings which temperature, relative diameter and stroke of piston, compression space, and time of ignition have upon it. It is necessary, however, to consider the chief practical difficulties which are found to exist with those two-stroke engines with which we are acquainted, and we will therefore conclude this general review of these machines by mentioning them.

It is necessary that the combustible charge should be forced into the cylinder immediately after (or at the same time that) the exhaust products are expelled from the cylinder. This involves the use of an air pump (or its equivalent), which is, however simple, a source of complication or possible trouble. The chief difficulty lies in the fact that it is necessary to expel the products of combustion and to refill the cylinder with a fresh charge in from one-fourteenth to one-fortieth of a second, when the engine is running at from 100 to 600 revolutions per minute. The result is that either the burnt gases are only partly expelled or that there is risk of a portion of the fresh charge passing into the exhaust pipe if the engine is allowed to vary its speed. The effect of this tendency upon the efficiency of the engine, upon its output, and upon its adaptability for motor-car propulsion would appear to seriously handicap it for purposes where large ranges of speed and power are necessary.

Doubtful as the competitive chances of the two-stroke engine are, in comparison with those most generally in use, we repeat that these machines yet call for the general attention of automobilists, and are a type of motor which is likely to be frequently brought before their notice in the near future.

MOTOR RACING AND MOTOR PACING

NELSON'S BIG VICTORY

Boston, June 30.—A motor paced bicycle race has been run which for details beats anything ever recorded. John A. Nelson won the greatest paced match race ever seen. In twenty miles he defeated Burns W. Pierce, the conqueror of Michael, by 480 yards and Albert Champion of Paris by 350 yards more. But Nelson won the race twice in the presence of 5,000 crazily excited people on a day so windy that thousands stayed away believing that the race would not be run. The little Chicagoan gained a lap in ten miles and had added sixty yards to the gain when his tire punctured. In changing wheels and connecting with his pacing teams again he lost the lap and 100 yards, being forty yards behind. Then he

started in all over again and caught his competitors who kept grinding away. He not only caught but he passed them and started after a lap again. He gained until he had half a lap and then slowed down until it was thought that he had shot his bolt. But not so, for, in the last two miles, he sprinted again and gained in big jumps, finishing fresh and smiling. He had not been shaken once during his ride while the others had been. Nelson had pushed a 116 gear throughout as did Champion. Pierce had 112. Nelson's position, his earnest look and the businesslike way in which he went about it without a glance to the right or to the left, without a look around for his competitors, caught the crowd and they cheered him to the echo when he finished. Authorities to-night hail him as the coming champion. No such contest was ever seen as that of to-day, for perfect pace prevailed and the adverse conditions added much to the interest. The time was comparatively slow but it was fast considering the conditions.

THE GOLDEN WHEEL RACE

Boston, July 2.—Boston will inaugurate the first of the many great annual races of historical and international interest when on July 9 the Great Golden Wheel Race is started. For this event, in addition to the purses, a trophy in the shape of a magnificent medal will be awarded. The race will be of six days' duration, two hours of riding daily and with six competitors. The entrants are Charles W. Miller, Burns W. Pierce, Albert Champion of Paris, Johnnie Nelson and Will C. Stinson, all champions.

This is the first event of its character, six days and motor paced, ever put on a cycle track. The field will be sent away, each man with one motor team and another in reserve, each night at eight o'clock. The night's racing will finish two hours later when the exact finishing positions of the six men will be taken in miles and yards. The start the second night will be from the tape and gains made by riders the first night will have to be made up by the others to come on equal terms. This will make the racing spirited all the way through. A large percentage of the gross receipts will be divided into five purses, providing five finish, into four purses providing four finish and so on the winner's share of the purse ranging from thirty-five to sixty per cent according to the number of finishers. Unless incapacitated by accident or illness every man sharing in the purse must ride the last two hours.

Nearly forty men will be directly concerned in the race, six pace followers, twenty-four motor men, six or more trainers and helpers.

ECHOES OF THE GORDON-BENNETT RACE

In an interview in Le Velo, Jenatzy, one of the competitors in the Gordon-Bennett International Cup Race, has the following to say:

"It was not fair to start drivers on such a dangerous course with so little preparation. I did not know the road. And I venture to say that it was the same with the other competitors. At least a map of the route might have been furnished. Even if a rough one, it would have been enough. If Le Velo had not furnished a list of the principal cities to be traversed, we would have had to do as Girardot—that is, fail to follow the proper course.

"And what a course!

"The outcome of the race signifies nothing. As for myself, I started to save my forfeit of 3,000 francs; but, without wishing to criticise Charron's victory, I must say that he is only the winner of the Paris-Lyons race, not the international champion, in the meaning of the Gordon-Bennett cup. The first race cannot be called a success. Let us hope that the second, if it ever takes place, will obliterate the impression left by the one of 1900."

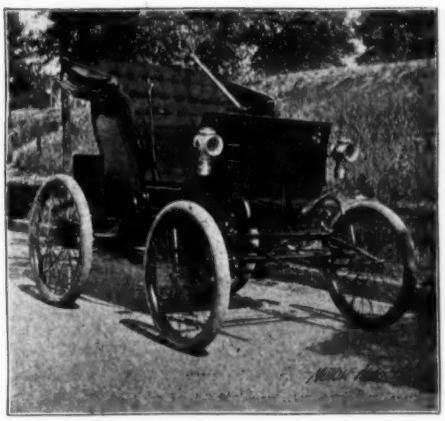
FLYING START RECORDS

At Brussels in a contest for the flying and standing start kilometer, Jenatzy with his three-horsepower gasolene vehicle covered the flying start kilometer in 38 1-5 seconds, a speed of ninety-four kilometers (50½ miles) to the hour; the former record belonged to Lemaitre, in 47 4-5. Another Belgian, Miesse, rode the same distance in a steam vehicle in 48 4-5 seconds, which is also a world's record.

IN CLEVELAND TRADE CIRCLES

A WEALTHY OHIO MAN ARRESTED ON A CHARGE OF ALLEGED BLACKMAIL PREFERRED BY JOHN W. EISENHUTH—NEW CONCERNS IN THE AUTOMOBILE BUSINESS

Cleveland, O., July 2.—There is a decided sensation in certain circles in this city, from the fact that a warrant has been issued in New York City for the arrest of Stewart H. Chisholm, a wealthy Cleveland manufacturer prominently identified with the iron trade. A report from New York states that Mr. Chisholm and others are charged with blackmail by John W. Eisenhuth, president of the Eisenhuth Horseless Vehicle Co. Mr. Chisholm is vice-president of the company. Eisenhuth has had several members of the concern arrested on similar charges. He claims that the men involved threatened to have him arrested unless he turned over to them $10,000 in cash and a controlling share of the stock of the company. The brokers concerned say that it is only a piece of spite work for certain things which were once said about an alleged effort on the part of Eisenhuth to sell stock under false pretenses.



Kohl Gasoline Carriage.

Mr. Chisholm is at present in the city and refuses to discuss the matter, saying it will be explained in the near future.

Edward Kohl who has succeeded to the business of the Kohl & Gates Motor Company is one of the leading exponents of the gasolene type of vehicle in that city and with comparatively limited facilities he is working up quite an extensive business; having delivered a dozen or more vehicles of the pattern shown during the past few months. The vehicle is equipped with a single-cylinder four cycle gasolene motor developing about six horsepower. The motor has a speed of from 200 to 1,000 revolutions per minute, running at about 450 under normal conditions. There are two forward speeds and one backward and a single lever controls all speeds. The vehicle is geared to thirty-five miles an hour. The weight of the vehicle is but 900 pounds.

The well known Standard Welding Co. is keeping a watchful eye on the automobile field, believing that its electrical welding process will prove valuable in economic production of parts and accessories. It has already done considerable experimental work in the building of automobile frames, saving the work of brazing numerous joints by welding sections together. Experimental work has also been done in the production of seamless steam boilers for steam vehicles. Samples were recently completed for a prominent concern of seamless boilers fifteen by eighteen inches, capable of sustaining a pressure of 1,000 pounds per square inch. The Standard company has completed plans for the production of seamless steel rims and will be prepared to quote prices on a complete line, including all sizes and styles, within the next thirty days.

Walter Baker, president of the Baker Motor Vehicle Co., is at present in Paris taking in the exposition and incidentally studying the details of foreign electric vehicle construction. The Baker company has completed several experimental vehicles which have proven uniformly

successful and satisfactory, and within the next month or two it will be prepared to announce an electric runabout which, it is promised, will prove a sensation as one of the lightest and most efficient electric vehicles ever built.

The Hoffman Bicycle Co. has fully decided to embark in the manufacture of steam vehicles on an extensive scale and it is the intention to produce every part in its own factory which is well equipped for the work. The first vehicle will be completed within the next thirty days. In appearance it will be similar to the Locomobile and it is claimed that several new and original features will be shown.

ELWEL PARKER ELECTRIC VEHICLE MOTOR.

Busy Making Parts

Joseph Dyson & Sons, manufacturers of drop forgings, are turning their attention to automobile work and are furnishing considerable material for the New York & Ohio Co. at Warren, O., as well as for other concerns. They are prepared to furnish anything in the forging line, working from blue prints.

The firm of Horseburgh & Scott, manufacturers of gears, are experiencing quite a demand from manufacturers of motor vehicles. They are prepared to furnish both rawhide and steel pinions of all kinds.

A New Corporation

The Owen Motor Carriage Co. of this city was incorporated last week by R. M. Owen, E. P. Degollier, A. B. Schnieder, W. W. Johnston and W. B. Watkins. Capital stock, $50,000. Several years ago Mr. Owen, who is at the head of the concern, built one of the first vehicles constructed in this section and he has been experimenting extensively since that time. He has built a number of successful vehicles and the company is prepared to turn out machines on quite an extensive scale as soon as permanently located. The first machine built by Mr. Owen was sold a few days ago to George Allen of Painesville, O., who has acquired quite a reputation as a genius through the fact that he constructed a practical vehicle from scrap parts of agricultural implements.

Design of Electric Vehicle Motors

In meeting the rapidly increasing demand for a motor adaptable for use in propelling electric automobiles, the designers of electric motors have been forced to consider several new features never before essential in small motor construction. The requirements in this direction call for a machine that is compact and of high efficiency because of the great weight of the batteries necessary for storing the required electrical energy. Such a motor must have a high efficiency at the frequent and average loads to get the best results. It is also of the first importance that it shall not

require attention in oiling or adjusting. It is also necessary that the motor shall be readily adaptable to nearly all standard forms of vehicles without any material change in its construction.

Elwell-Parker Motor

The well known Elwell-Parker Electric Co. of America, the headquarters of which are in Cleveland, has given the subject in question exhaustive cons der-ation and after an extended series of experiments is now turning out standard motors for automobiles which it is believed will answer the requirements fo: a first class machine as noted above. The company's No. 2 motor which is illustrated herewith, will deliver, it is claimed, brake horsepowers in a range from 1½ to 2¾, without dropping below eighty-two per cent in efficiency, and this also within a range of speeds between 800 and 1,300 revolutions per minute.

Construction of Motor

This machine is equipped with the latest pattern of dirt and dust proof ball bearings that are so made as to be interchangeable. There are two ball races in each of the two bearings and they are so seated as to be self aligning. The frame or casing is practically water tight and yet with suitable provision for quick inspection of adjustments at the commutator. The commutator is ample in diameter and length, thus securing plenty of brush surface for the proper handling of the large currents necessary when the machine is called upon to exert heavy torques. The armature is made very strong in every particular. The field magnet is of the laminated type with continuous wrought iron yoke and the field coils with their cores are easily removable in case of necessity. The whole design and construction is such as to secure the highest electrical and mechanical efficiency with the minimum weight and size. The company claims that the high efficiency of its machines is apparent from the fact that the No. 2 motor weighing but 145 pounds will deliver a range of brake horsepowers up to 5½ and an efficiency of eighty-two percent on the wide range of power, as noted above.

The Motor Under Test

A recent test of one of these machines made by a prospective purchaser gave striking evidence as to its qualities. A vehicle with passengers weighing 1,950 pounds was propelled by one of the No. 2 motors at a speed of twelve miles an hour with 12¾ amperes of current with a voltage rather under eighty. The test was made on asphalt pavement, which is claimed to be inferior to a hard macadam road for light running qualities.

It is believed by the company that this performance has never been excelled by any other motor or combination of similar size.

The Elwell-Parker Co. is in a position to turn out these motors in large quantities and has standardized and brought out Nos. 1 and 2 and will shortly bring out other sizes. The company also furnishes a well designed controller for use with its carriage motors.

NOTES FROM GERMANY

Berlin, June 19.—Herr B. Loutzky, the director of the Berlin company of automobile-carriage builders, has been called to Paris by the German Imperial Commissioner to organize the German motor-car department of the Exposition. Count Talleyrand-Perigord, who is German in spite of his extremely French nomenclature, has been even more honored, for the Minister of Public Works at Paris has appointed him a member of the jury for division VIII of the Exposition, traffic.

Herr Oberbaurat Klose, whose name has been frequently mentioned in these columns as one of our most prominent

men on automobile affairs, has withdrawn from the management of the Allgemeine Motorwagen-Gesellschaft, Berlin.

A new automobile factory has been founded in Nuremberg and the firm in question, Liebe Kotschenreuther & Co., has lost no time in appearing before the public, as their exhibits are on view at the Nuremberg show.

The German Automobile Association is now no longer a thing of the future, but has assumed firm shape, and was founded in Berlin on May 27, delegates of all the important German clubs being present at the initial meeting, which was held in the rooms of the German Automobile Club, whose vice-president, General von Rabe, received the guests. The following clubs were represented: The West German Automobile Club, Aix-la-Chapelle; the Wurtemburg Motocar Club, Stuttgart; the Bavarian Automobile Club, Munich; the Mid-German Automobile Club, the First German Automobile Club at Frankfort-on-the-Main; the Rhenanian Automobile Club, Mannheim; the Frankish Automobile Club, Nuremberg, and the German Automobile Club, the following members of which took part in the meeting: Prince Christian Kraft du Hohenlohe, Major-General von Rabe, Oberbaurat Klose, Dr. Levin, Commerzieurat Loewe and Count Talleyrant-Perigord. Prince Hohenlohe took the chair and addressed the assembly in a few well-chosen words. The regulations, which had been worked out by the German Automobile Club, were accepted, after some discussion as to the number of delegates each club is allowed to send to the general meetings, and it was finally resolved that each club should have a delegate for every twenty-five members, but no club should have more than five votes; clubs with less than twenty-five members have one vote. The president of G. A. C., the Duke of Ratibor, who was not present in the morning, but took the chair in the afternoon meeting, was chosen president, and Herr Klose treasurer of the association, which will hold its first congress in Berlin in the first days of September, when a committee of twelve is to be elected.

After the meeting the delegates were entertained to dinner by the German Automobile Club.

The West-German Automobile Club at Aix-la-Chapelle is arranging a motor race from Berlin to Aix-la-Chapelle for July 5; the distance is about 718 kilometres.

An automobile road race was run on the route Salzburg-Lentz-Vienna on June 1 and resulted in a victory for Von Stern in 3 hours 6 minutes 2 seconds; Baron Liebig coming home second and Baron Godelli third. Max, the once well-known cyclist, fell and had to discontinue, while there was even more than the usual percentage of accidents, as the roads were in a very bad condition, owing to the rain.

A general motor car exhibition will take place at Leipzig from October 19 to 23 in connection with the third German cycle exhibition. The motor division will comprise six groups and deal most extensively not only with the industry itself, but with literature and clothing as well as other items appertaining to the industry. The exhibition is open to competitors of all countries, and Herr Willy Werner, 10 Salomon Strasse, Leipzig, will gladly supply all information required.

The German War Office has been experimenting with motor-cars in the neighborhood of Berlin to ascertain whether the cars used would meet the requirements of the army. The districts passed through were from Bernau to Eberswalde and back to Berlin; nine cars were in motion and were driven by the officers and men of the various regiments. Nothing has been published up to the present as to the decision arrived at by the War Office.

Baron Arthur de Rothschild arrived in Hamburg, Germany's most fashionable watering place, on Whit Monday, having left Paris on his motor on the preceding day. The Baron rode the distance in sixteen hours via. Strassburg, Heidelberg and Frankfort on-the-Maine.

The Austrian Automobile Club can boast of a membership of 480 and is daily gaining in importance. The club has

oppened a school for drivers and this is being attended by a great member of gentlemen and mechanics.

Beware of your friends! Trust them even less than your enemies! A gentleman living not far from Duesseldorf has had to acknowledge the truth of the two adages, for a so-called "friend" of his borrowed his motor tricycle for a short ride on June 3 and on June 15 had not yet returned from his outing, so that the original owner found himself in the awkward position of having to advertise his loss and publish a warning at the same time against a purchase of the machine. Much sympathy is being felt for the gentleman so ruthlessly deceived by a friend—save the mark!

The Bavarian Automobile Club intends to popularize automobilism in Munich by processions through the capital on stated days of the month.

An automobile display is to take place in Breslau during the month of September in connection with the general German Sanitary and First Aid exhibition that is being arranged there.

Vienna has its first electrical omnibus, for on June 14 this conveyance was placed on the streets and at once stormed by people eager to boast of their having ridden in the "motor." Siemens & Halske are reorganizing the tramway-traffic in Vienna and are paying attention to a bettering of the omnibus service as well; they intend to do away with the help of horses and run only electric conveyances.

The Cologne police authorities have just issued a set of laws regulating motor-car and motor-cycle traffic in the city famed for its odors. The wiseheads who worked out the code must have racked their brains—if they possessed any—incessantly before they triumphantly flaunted their ignorance of the progress of science and traffic in the face of an indignant and amused world. For firstly, all vehicles must be adorned with a plate bearing the registered number of the car or cycle, then each rider or driver has to possess a police permit, thirdly, each vehicle has to have two brakes working entirely independent of each other; furthermore, the maximum speed permitted is twelve kilometers per hour and to crown all, every motor-car or wheel has to be fitted with an apparatus preventing a transgression of the latter law. What is meant by this, after ordaining the presence of two brakes is inexplicable. However, the fiat has gone forth and the Cologne motorists will have to band together to free themselves of these absurd restrictions.

An automobile driving school was opened in April at Innsbruck, a certified teacher having been appointed to guide the destinies of those desiring to learn the intricacies of the motor-car. His job is surely not an enviable one.

The Nuenberg exhibition of motor-vehicles is arranging a long distance race for the latter part of the month as well as a flower corso. I am afraid the German police authorities will soon grow tired of the endless road races with which we are being deluged and will veto them. It is always the same tale, instead of being satisfied with a limited number of races, everybody in any way connected with automobilism seems to regard himself as called upon to institute a road-race, thereby swelling the number of such events into an almost endless succession and hurrying on the inevitable reaction.

Prince Max Egon of Thurn and Taxis joined the Frankfort Automobile Club.

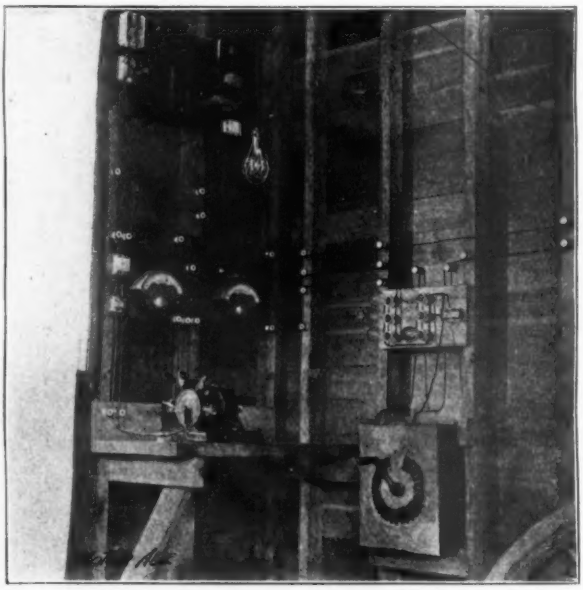
The Frankfort Automobile Exhibition in the Agricultural Hall, Frankfort on-the-Maine opens on July 4 and lasts till August 12. A brilliant success is predicted as entries are steadily coming in.

The Baden-Gratz-Baden road race was ridden in two stages: from Baden to Gratz, 165 kilometers, on Saturday, and from Gratz back to Baden on Sunday, June 11. Jacob Dietrich, the Viennese motorist, won the event on his 3½ horsepower motor racing tricycle in 8:18:11 2-5. His time was the best for all divisions. Count Schoenborn was first man home in the touring motor-tricycle group, Struhatscheck in the touring car and director Erhardt in the voiturette divisions. The race passed off without any mishaps of importance. Dietrich rode better on the way to Gratz than on the return journey, but the numerous climbs he encountered on the homeward route naturally account for that.

A MODEL AUTOMOBILE BARN

The advent of the automobile will undoubtedly work changes in many institutions connected with it; in fact, at this early date it is almost impossible to calculate the extent of some of these changes.

As a result of the elimination of the horse, the architect who designs barns in the future will find it advisable to institute many new features never before thought of, while facilities heretofore indispensable, will be abandoned. Stalls, feed bins, harness racks, and even hay mows will be done away with, while, instead, the barn of the future will require charging stations, gasoline tanks, pumps, repair tools and other accessories. The elimination of the haymow will make it possible to have but a single story or story and a half building, while the absence of stalls will give a floor clear of obstructions and permits the use of cement if desired.

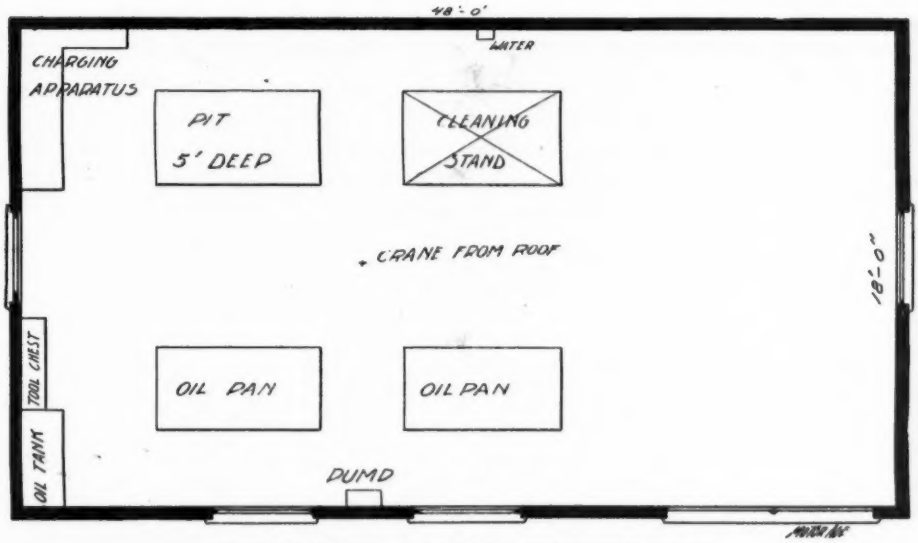


Autom bile Charging Apparatus for Alternating Current.

A stable which is designed wholly for automobiles has recently been completed in Cleveland by George S. Weise, 75 Ingleside Avenue, and in a number of features it is unique and distinctive from anything of the kind ever erected. Needless to say Mr. Weise is an enthusiast of the most pronounced type. He was the owner of the first automobile in Cleveland and was the purchaser of the first machine sold by Winton Motor Carriage Co.; also the first sold in this country by the Cleveland Machine Screw Co., which, as is generally known, is exporting a considerable number of electric vehicles to France. Recently Mr. Weise bought the first gasolene vehicle built by the New York and Ohio Co. of Warren, Ohio, and in this vehicle he has made several noteworthy runs. His order has also been placed for a steam vehicle of the latest pattern made by an eastern firm; hence it will be seen that Mr. Weise favors no one type of vehicle and has experimented with all. Being an enthusiast, Mr. Weise is of the opinion that all owners of motor vehicles should have the same enthusiasm, and, as he remarked a few days ago to a Motor Age representative, "No one has any business attempting to operate a motor vehicle unless he understands it, and to understand it one must be willing to put on old clothes and take care of his machine himself. I believe that more than half the pleasure in operating a machine of this kind lies in understanding all its peculiarities and being able to remedy them on the spot."

In designing his stable, Mr. Weise planned everything for his own convenience and with an eye to economy, and, while the interior is not in a highly finished condition, yet it contains all the accessories and conveniences which several years of experience with automobiles would suggest.

The building is of frame, forty-eight feet long by eighteen feet wide and a story and a half high, there being no second floor. Hanging from the roof in the center of the room there is a crane to which an automobile can be strapped and lifted from the floor several feet, if desired. The Weise claims that this is indispensable to owners of gasoline vehicles. It has been passed upon as safe by fire insurance companies and there is absolutely no possibilty of explosion. The tank is divided into two portions, the upper being practically air tight, made of galvanized iron, double riveted. There is a gauge which allows only a certain amount to flow at a time; enough to nearly fill a small can placed inside the lower tank. The door of the lower tank can be locked while the upper tank is independently secured when filled and is opened only at such time. At one side of the tank is a large



PLAN OF GEORGE S. WEISE'S AUTOMOBILE BARN.

use of this is not frequent, however, since easy access to motors is facilitated by a cemented pit five feet long, over which a vehicle can be run; thus obviating the disagreeable necessity of lying flat on the back. The pit has a board cover when not in use. The floor of the barn is of cement and there are sewer and water connections and a depressed drain, thus facilitating the cleaning of machines. When not in use each machine stands on a large sheet metal pan which protects the floor against the drippings which the experienced automobilist appreciates can not be prevented. In one corner of the room there is a gasoline tank known as the Insurance test gasolene tank built by S. F. Bowser of Ft. Wayne, Ind. Mr. chest of drawers for tools and other accessories. Another convenience is an automatic tire inflator.

The most novel feature of the entire outfit and one which probably can not be duplicated in this country, is the charging apparatus for the electric vehicles. The securing of proper current has been a great problem to Mr. Weise and it is one which is appreciated by all electric vehicle owners, especially those who live at some distance from the center of the city. As in the majority of cases the only current which he could secure direct to his home was that furnished by the local illuminating company which is known, to those experienced in electricity, is impractical for storage bat-

tery use, because of the alternations. Current transformers are in use for certain purposes in this country but they are so bulky and expensive as to prove out of the question for domestic purposes. Accordingly, Mr. Weise made known his wants to a prominent electrician in this city who after a series of experiments, lasting several months, designed the machine shown in the illustration. In appearance it resembles a motor or dynamo and while the inventor is not prepared to go into details of construction for the reason that the device is still in the nature of an experiment, it can be stated, that, technically speaking, it consists of an alternating commutator on one end with a direct motor on the other. Suffice it to say that after some months' use the gentlemen are convinced it answers all requirements, transforming an alternating current with sixty alternations per second into a direct current; figuratively speaking, combing out the kinks at the rate of sixty per second. The alternating current passes through the meter shown at the top of the illustration, passing directly into the "receiver," as the device is called, passing through the brushes. The transformation takes place and the direct current passes through an ammeter, volt meter and rheostat into the carriage battery. While it answers the purpose, it is stated that the direct current delivered is not a true unvarying flow, but it has slight pulsations which slightly stir the battery, and their experience has shown that this slight agitation gives the electrolite a better opportunity to work on the active material of the battery. It is also claimed that the battery can be charged at a faster rate. Thus far there have been no deteriorating effects upon the battery and it is claimed and confidently believed that the system of charging will lengthen the life of the battery. The device requires no attention and is simply connected up and allowed to run until the battery is charged. It is comparatively small in size, weighing less than 40 pounds, and, if neccesary, it could be carried with the vehicle and set up wherever it was found necessary.

WEEKLY PATENT OFFICE BUDGET

LA ROCHE'S COMBINATION MOTORS

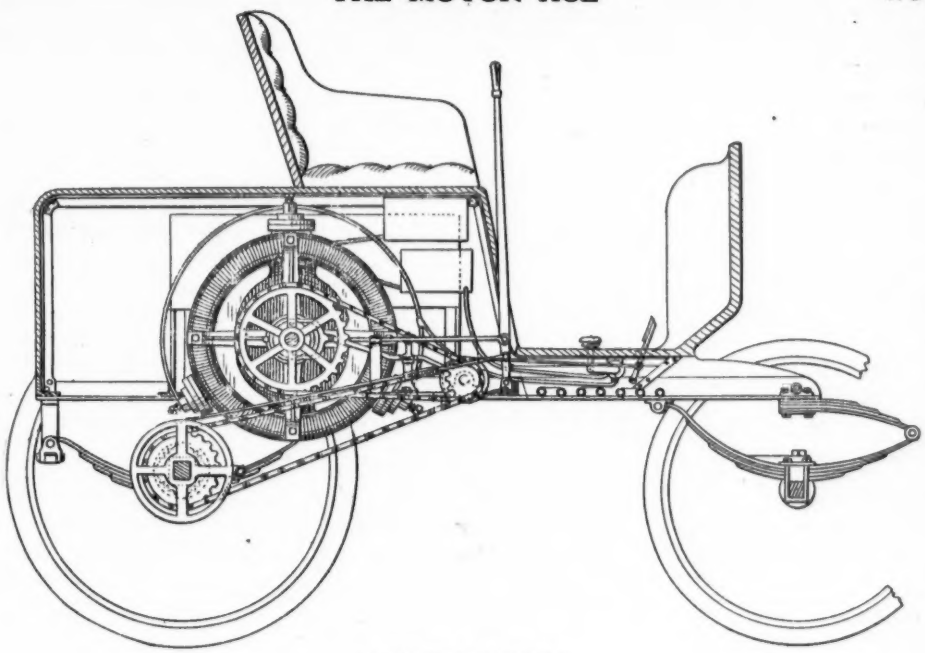
Letters Patent No. 652,278, to Frederick A. La Roche, New York City; combined electric and gasolene motors.

Mr. La Roche's patent covers a vehicle in which he has utilized the principle—on which a number of other inventors have worked—of using a gasolene engine in connection with a dynamo-motor and storage batteries.

The gasolene engine may be run when the vehicle, itself, is at rest, driving the dynamo-motor as a dynamo to charge the storage batteries. The dynamo-motor also acts as a dynamo for the generation of electro-motive force when the vehicle is in motion, but does not need the full power of the gasolene engine to drive it and likewise on down grades and when the vehicle is being brought to a stop, acting in the last named case as a brake. When, on the other hand, the power of the gasolene engine is insufficient to drive the vehicle, the dynamo, by the changing of the polarity of the field magnets, becomes a motor and draws on the stored energy of the accumulators. The electric motor is also used to start the vehicle in order to put the gasolene engine into operation and to reverse the direction of travel, which, of course, does away with the necessity of having any reversing gearing for the gasolene engine.

The inventor claims a great efficiency for the gasolene engine, inasmuch as it can run at an approximately constant load, whatever the calls of the energy. Strangely, however, he uses a primary battery for sparking his gasolene engine.

No less than twenty-four claims are al-



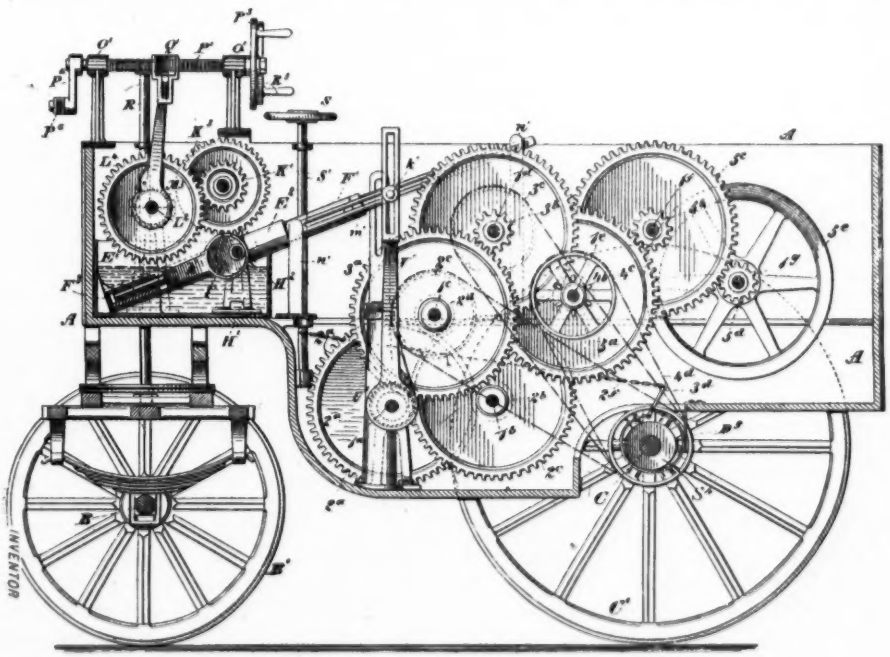
LA ROCHE'S VEHICLE.

lowed, some of them of considerable length.

WAECHTERSHAEUSER'S CONGLOMERATION

Letters Patent No. 652,571, to Otto Waechtershaeuser, Elizabeth, N. J.; transmission gearing.

The four claims allowed to the gentleman with the Teutonic cognomen are worthless. The accompanying illustra-



WAECHTERSHAEUSER'S TRANSMISSION GEARING.

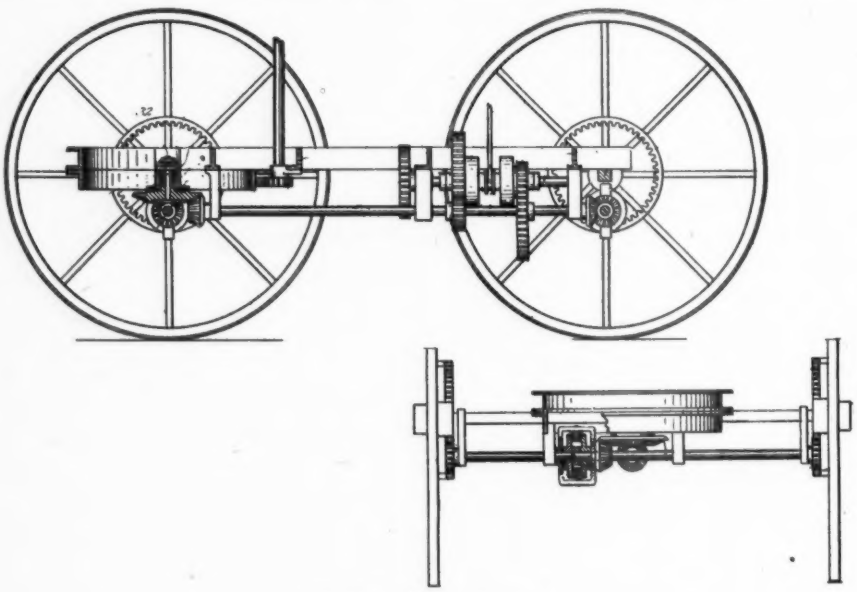
tion—one of the nine drawings accompanying the patent—is shown as a sample of how much mechanism some people think is necessary to connect the motor and driving shafts of an automobile.

Mr. Waechterhaeuser gives inventors an example to shun.

CROIL'S RUNNING GEAR

Letters Patent No. 652,534, to Thomas Croil, Milwaukee, Wis.; running gear and transmission device.

Mr. Croil, in common with many other constructors, believes that motor-vehicles should be driven through all four wheels, and his patent covers mechanism for accomplishing this result.



CROIL'S RUNNING GEAR.

The vehicle is provided with two non-revolving axles and the steering is accomplished by means of a toothed fifth wheel engaged with a pinion on the end of a shaft connected with a hand steering wheel.

The motor shaft is connected by speed changing gears to a countershaft disposed lengthwise of the vehicle in the center. At either end of this countershaft is a bevel pinion. There are two other countershafts, one located under each of the axles and parallel to it. These countershafts have pinions at either end which mesh with toothed wheels clipped to the loosely journaled traction wheels. They are also provided with differential gears, located near their centers. The differential gear on the rear of these two countershafts is provided with a bevel pinion which meshes directly with the bevel pinion on the rear end of the longitudinally disposed countershaft. The compensating gear of the forward countershaft is also provided with a bevel pinion which is actuated by the bevel pinion of the forward end of the longitudinally disposed countershaft, through an intermediate horizontal bevel gear wheel whose axis is concentric with that of the fifth wheel, thus permitting the steering of the vehicle without interrupting the smooth transmission of the power to the front traction wheels.

Six claims are allowed.

MACLULICH'S TIRE

Letters Patent No. 652,281, to James M. Maclulich, Dundrum, Ireland; vehicle tire.

Several attempts have been made to vulcanize tires so that the thread portion will be in a state of compression and will thus offer maximum resistance to vibrasion. Such tires have been manufactured

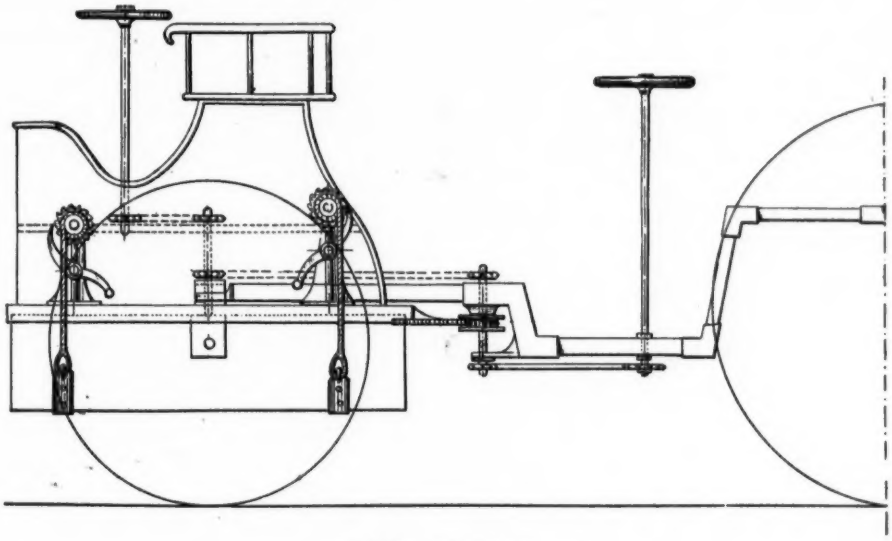
by vulcanizing them in the form of a coil of less diameter than that of the wheels to which the finished tires are to be applied, but this process has the disadvantage that there must be a joint, as an endless tire cannot be so formed without becoming twisted when removed from the mandrel.

Mr. Maclulich is the inventor of a method to manufacture whereby a tire may be wound spirally around a mandrel without being permanently twisted. According to this invention the tire is looped around the mandrel so that twists are produced in contrary directions. The tire when opened out will present an untwisted endless band, having its peripheral portion in a state of compression. The mandrel used consists of two parallel telescopic portions joined at their extremities by clamps and together forming a flattened rim which may be adjusted to various sizes. The previously formed endless tire is wound upon the mandrel and is vulcanized thereon in this position. The twists due to the coils upon one side of the mandrel are compensated for by those due to the coils on the other side, so that no total twist is produced. In order to preserve the uniformity of the compression at places where the coils change from one direction to the other tubular arms or projections are formed on the mandrel over which the tire is patched. For the purpose of retaining the tire during vulcanization a series of cups adapted to fit the lower half of each coil are provided. These cups are adjustably mounted on a frame that may be moved to any position or inclination according to the diameter of the tire and the number of its convolutions.

Six claims are allowed.

GREFFE'S FORECARRIAGE

Letters Patent No. 652,673, to Joseph Greffe, Paris, France; automobile forecarriage.



GREFFE'S FORECARRIAGE.

The accompanying illustrations show the general construction of the device which is designed to use storage batteries and an electric motor or a gasolene engine for the motive power. The mechanism is so arranged that it can be steered either from the front or from the rear.

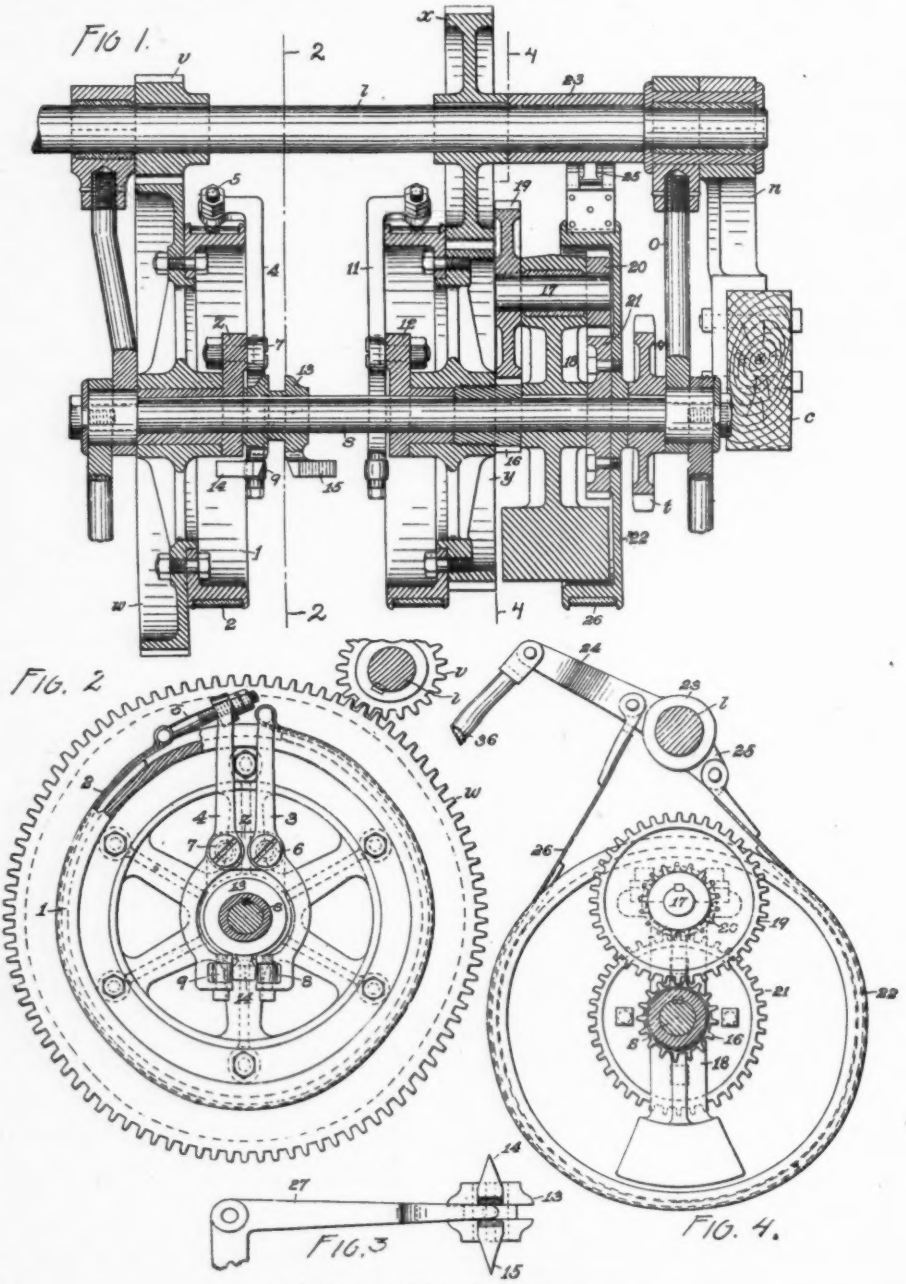
There are three claims allowed, but on combinations so simple that it is doubtful if they have not been many times anticipated.

OWEN'S TRANSMISSION MECHANISM

Letters Patent No. 652,486, to Raymond M. Owen, Cleveland, Ohio; transmission device.

Mr. Owen's patent covers a transmission mechanism which does not differ

greatly from a number already in use, but is described somewhat in length as being fairly compact and well designed.



OWEN'S TRANSMISSION MECHANISM.

Fig. 1 shows a sectional view of the mechanism; Fig. 2, a section on line 2 2 of Fig. 1; Fig. 3 a plan view of the slide block and forked elbow which operate the clutches, and Fig. 4 a section on line 4 4 of Fig. 1.

Mounted upon the motor-shaft is a pinion v and a larger toothed gear-wheel x, engaging, respectively, with the toothed

wheels v and y, which are arranged to run loosely on the counter-shaft when the wagon is at rest; but either wheel may be clamped to the counter-shaft by means of a friction clutch mechanism, thus driving the vehicle forward at either one of two speeds, according as one or the other of the said wheels is made to revolve the counter-shaft.

Referring to Figs. 1 and 2, it will be noticed that the wheel w is journaled loosely upon a sleeve z, which sleeve is keyed to the counter-shaft. The wheel w carries securely fastened to it, concentric with the shaft, a clutch-ring 1, encircled by a band 2, preferably of steel, sprung into position, so that its tendency is to open out away from the ring and secured at one end to the laterally-projecting end of the lever-arm 3. The other end of the said band is secured to an adjusting-bolt 5, provided with nuts and passing through an eye in the end of the lever-arm 4, similar and opposed to the arm 3. The lever-arms are fulcrumed, respectively, on pins 6 and 7, made fast to a flange on the sleeve z, and curved to avoid the shaft and slide-block, and are provided with rollers 8 and 9, journaled on pins between jaws in the lower ends of the respective lever-arms. The wheel y is provided with a clutch mechanism similar to that described above for wheel w, which is operated by arms 10 and 11, fulcrumed to a sleeve 12, keyed to the shaft in such a position that the lever-arms of the respective clutches are directly opposite each other.

A slide-block 13, keyed to the counter-shaft, but free to slide endwise thereon between the clutches, is provided with a circumferential groove to engage an operating-lever and has two wedge-shaped arms 14 and 15, projecting oppositely lengthwise of the shaft and so located that when the block is moved along the shaft the sharp edge of one of the wedges enters between the rollers on the arms of one of the clutches and forces them apart until the arm of the slide-block has entered so far that the rollers bear against the flat parallel sides of said arm, as in Fig. 1, in which position the clutch-band is drawn tightly about the ring, and the slide-block has no tendency to release it, thus clamping either the gear-wheel w or the wheel y, according as the side-block is forced toward the one or the other, to the counter-shaft.

A reversing arrangement is provided working, preferably, in conjunction with the higher-speed mechanism, as herein shown; but it is possible and quite feasible to attach it to the lower-speed mechanism and in either case to proportion the gearing so as to produce a desirable rate of speed. A pinion 16, Figs. 1 and 4, mounted loosely upon the counter-shaft, is rigidly attached by screw-threads or other means to the gear wheel y. A shaft 17 is journaled on a bearing on the end of an arm 18, which arm encircles and is firmly keyed to the counter-shaft and is provided with a couterweight to balance the said bearing, shaft, and gears thereon. On one end of said shaft is keyed a toothed wheel 19, engaging with the pinion 16, and on the other end is keyed a pinion 20. A toothed wheel 21, fitted to run loosely upon the counter-shaft and engage with the pinion 20, has bolted or otherwise firmly attached to it a friction-ring 22, grooved to receive a band-brake, in a similar manner to the clutch-rings before described. Loosely mounted upon a journal, upon the motor-shaft, is a hub 23, carrying an operating-arm 24 and a shorter arm 25. A friction brake-band 26 is passed around the ring 22 and has one end hinged to the arm 25 in such manner as shown, so that said arm 24, being revolved through an angle of a few degrees toward the rear, draws this band tightly about the ring.

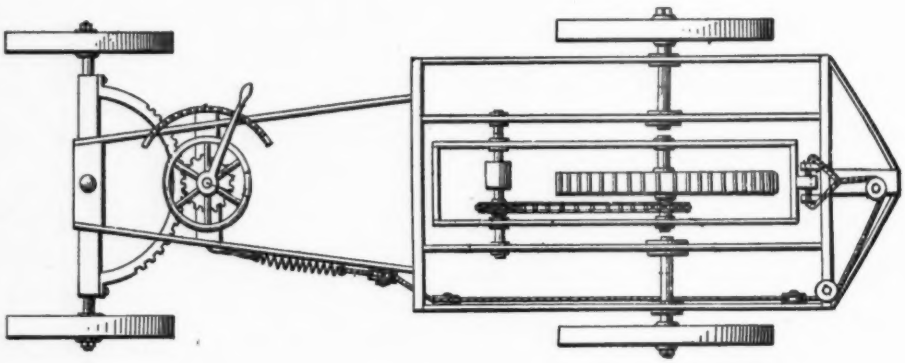
Pivoted to the cross-piece e is an elbow-lever 27, one arm of which is forked and provided with pins to engage the groove in the slide-block 13. An operating lever is fulcrumed in a position accessible from the seat, and its lower end is hinged to a connecting-rod, which is hinged at its other end to the laterally-projecting arm of the elbow-lever 27.

The reversing-lever is fulcrumed to the frame. Its lower end is connected by suitable hinge-joints and a rod 36 with the end of the arm 24.

In the operation of the vehicle, the motor having been started, should it be desired to go ahead, slowly the starting lever is moved forward, thus forcing the slide-block 13 between the clutch-levers

3 and 4, clamping the wheel w to the counter-shaft. When this lever is moved backward the slide-block is forced between the clutch-levers 10 and 11, clamping the wheel y to the counter-shaft, in which event the vehicle will run at its high speed forward. Should it be desired to run the vehicle backward, the reversing lever is pushed forward, which rocks the hub 23 and tightens the brake-band 26, holding the ring 22, with its gear-wheel 21, from revolving; but the shaft 17 being revolved through the gear-wheels 19, 16, y, and x, and its pinion 20 being in engagement with the wheel 21, which is held stationary, this shaft forces the arm 18 to revolve itself and the counter-shaft in a backward direction, thus causing the vehicle to run backward.

Ten claims are allowed.



DONOVAN'S FIFTH TRACTION WHEEL DEVICE.

DONOVAN'S SEPARATE TRACTION WHEEL

Letters Patent No. 652,669, to Jeremiah Donovan, Escanaba, Mich., assignor of one-half to Albert McK. Donovan, Detroit, Mich.; motor-vehicle traction wheel device.

Mr. Donovan thinks an automobile is best constructed when a separate traction wheel is provided for transmitting the power. A number of other constructors have the same idea. His patent is supposed to cover this same idea. But it does not. The single claim allowed will not stand in the way of any one who desires to construct a vehicle on this principle.

BEFORE APPLYING FOR PATENTS

Mechanical men, before applying for patents on any device applicable to motor-vehicles, will save a world of trouble, and, in many cases, a deal of money, by being provided with a copy of Allen's Digest of Automobile Patents, an exhaustive history of all patents up to July 1, 1899. With the weekly supplements, this digest is kept constantly up to date. For further particulars, see display advertisement.

HOW TO SAVE MONEY

Many a man has wasted time and money in perfecting devices that have already been perfected, only to learn, when applying for a patent, that he has been anticipated. This can be avoided, as far as motor-vehicles are concerned, by having a copy of Allen's Digest of Automobile Patents. See display advertisement on another page.

FROM THE FOUR WINDS

A TRIP AROUND LAKE ERIE

Cleveland, July 2.—Mr. and Mrs. E. O. Strong and Mr. and Mrs. W. S. Root returned to Cleveland Friday, having completed the first automobile trip around Lake Erie and probably the first tour through lower Canada. Mr. and Mrs. A. S. Ingles went with them in another vehicle, but, through lack of time, they returned from Toledo by boat. The gentlemen are members of the Cleveland Automobile Club, Mr. Strong being president of the organization. The party left Cleveland last Saturday evening, going to Buffalo. From there they crossed into Canada, passing through London, Hamilton, Sarnia, Chatham, Windsor, across by ferry to Detroit, then to Toledo and from that city to Cleveland, by the way of Fremont, Norwalk and Elyria.

Speaking of the trip, Mr. Strong said, "We averaged over 100 miles a day and encountered but one accident. We caused a runaway in a Canadian town, but that was not our fault, but that of the man driving. We made a sensation through Canada, for ours were the first automobiles ever seen in the towns which we visited. It was not unusual for country schools to be dismissed, as our coming was announced from place to place. We were treated with the utmost courtesy and found the roads far superior to those on this side of the Lake. We had amusing experiences and we stayed some nights in quaint country inns and others in larger towns—wherever we happened to be at bed time."

Mr. Strong is an enthusiastic advocate of good roads and believes that the automobile will complete the good work in this direction, started by the wheelmen.

The vehicles used by the party were all Winton phaetons.

JOTTINGS FROM WASHINGTON

Washington, June 23.—Gradually the automobile is assuming a position of importance in the commercial life of the national capital. Several hotel proprietors have lately been experimenting with automobiles with a view to substituting them for their horse-propelled vehicles running between the hotels and the depots, and judging from the satisfaction they are giving and the patronage they are commanding, it is not too much to say that the familiar hotel omnibus with its pair of scrub horses will soon be a thing of the past—at least in Washington. The department stores are also experimenting with automobiles in the delivery of goods and it is proving a good advertisement for them.

One of the local street railway companies has added to its equipment a modern wrecking wagon in the shape of an automobile. The vehicle, which was manufactured by the Riker Electric Vehicle Co., was given an exhaustive trial trip recently and the work that it accomplished, more than exceeded the expectations of the railway officials. The vehicle is fully equipped for rapid running, as well as with the implements and appliances to repair damages to cars or road in the event of an accident or tie-up.

The attorney for the District has rendered an opinion to the effect that separate licenses should be required for each automobile used for the transportation of passengers for hire, whether they be located upon a public stand or upon private property. He also held that a license should be required by the District Commissioners for each automobile used under contract with hotels, clubs, etc., or in the service of the United States, not, however, meaning such automobiles as are the property of the United States, because vehicles under these conditions are practically at the public service.

The opinion was in reference to a request of the representative of one of the automobile companies operating a service here, to be informed as to whether the license law concerning hacks is applicable to automobiles not located upon public stands, but upon private space.

It has just been learned here that one of the French consular officers has been

investigating the possibilities of Sweden as a market for motor vehicles. In a report to his government on the subject he says the general opinion of the Gothenburg business world is that the importation of motor cars could acquire considerable importance if the first arrivals were of a nature to please the buyers, i. e., that they should combine elegance, strength, safe and easy management with moderate price. He says further that the Stockholm jobmasters have already given serious attention to this question, and experts have been sent to Berlin to study the cars built in Germany. Their report has been unfavorable, the cars they examined not corresponding to the description given in the catalogues.

CLEVELAND CLUB EXHIBITION

The Cleveland Automobile Club which is the second oldest organization of the kind in the country, is planning for a public exhibition and races, designed to familiarize the people with the possibilities of the automobile and to convince them that it is already a fixed element of modern transportation. In addition to a road race, it is proposed to have obstacle races, maneuvering contests, grade climbing races and other interesting performances. It is the present plan that the exhibition shall be free and that it shall be held at a time and place that will make it possible for a large number of people to be present.

This will be the club's first important public performance. Last winter a number of the members appeared in a parade but the weather was so inclement that the showing did not do them justice, and comparatively few people witnessed the novel sight. The event mentioned will be planned after similar exhibitions of the kind that have been given in New York and abroad. One of the performances that will be attempted by local people will be to drive a machine up a flight of a dozen or more steps to a narrow platform at the top, and, turning around on the platform, come down. The platform at the top of the steps is to be but a trifle wider than the machine itself and not much longer, so that it will require careful manipulation not only of the steering gear but of the propelling power to avoid running off. The details of the field day have not yet been arranged but it has been decided to have a road race and it is understood that two or three local builders are quietly at work on machines which will prove speedier than those they have previously constructed.

The preliminary work of organizing the Cleveland Automobile Club was begun last year and in January of this year the club was incorporated. The constitution states that the club is a social organization, composed "in whole or in part of people owning self-propelled pleasure vehicles for personal or private use" and thus far all the members of the club are owners of automobiles. One of the chief objects of the club is to promote original investigation into the mechanical development of motor carriages. Pleasure runs and road contests of all kinds are encouraged. Other objects of the club as set forth in the constitution, are co-operation in securing national legislation and rules governing the use of automobiles in city and country, maintaining the rights and privileges of self-propelled vehicles whenever and wherever they are mentioned, encouraging the construction and maintenance of good roads and promoting the sport of "automobilism" throughout the country.

E. L. Strong, a member of the wholesale drug firm of Strong, Cobb & Co., is president of the club. George L. Weise is vice-president; L. H. Rodgers, secretary and Windsor T. White treasurer. There are now about fifteen active members who are among the most prominent business men of the city. There are about ten others who are regarded as practically members although they are not yet formally qualified, because of absence from the city, some of them being in Europe.

NEWS OF THE MOTOR INDUSTRY

AUTO-CARBURETER

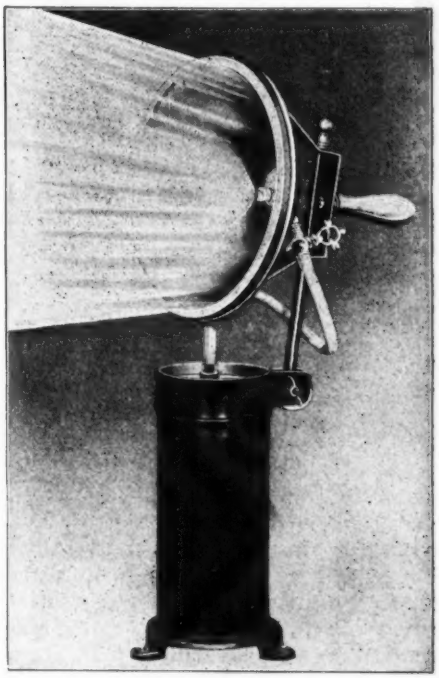
A carbureter, designed for use on motor-vehicles, has been constructed by Avery & Jenness of 28 West Washington Street, Chicago, which, according to the claims of the makers, is affected

Auto-Carbureter.

neither by the varying degrees of temperature nor the dampness of the atmosphere, and furnishes a thoroughly homogeneous explosive mixture at all times and under all conditions. No provision is made for heating the gasolene, as the makers claim that the carbureter furnishes a perfect mixture without the application of heat. It is also claimed that the gasolene can be completely used up and still give a perfect mixture. Experiments have been carried on for several months in perfecting this device by the senior member of the firm, who has been known for years as one of Chicago's cleverest mechanics and inventors. The accompanying illustration gives an excellent idea of the appearance of the carbureter. As can be seen, it is very simple in construction and there is little to get out of order. A simple safety valve is provided to prevent danger from backfiring from an imperfectly designed engine, an uncommon but very desirable adjunct to carbureters.

THE AVERY SEARCHLIGHT

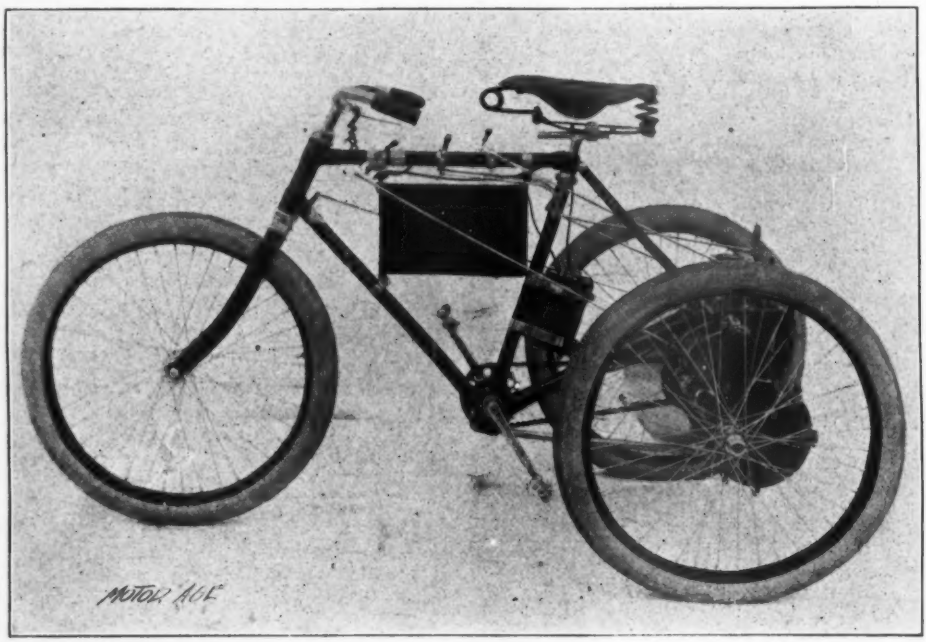
Carse Bros. of 64 and 66 Wabash avenue, Chicago, are marketing a light for motor-vehicles that is a decided novelty. It justifies its name of the Avery search-



Avery Searchlight.

light. The accompanying illustration shows the searchlight as used for yachts. The light is obtained from acetylene gas, and when used on motor-vehicles, the

generating tank is carried in the body of the vehicle, connection to the burner being made by a flexible pipe. The calcium carbide is carried in a porous jar immersed in water and the generation of the gas is, in consequence, regular and constant. Half a pound of carbide is sufficient for an evening's use, making the expense less than a cent an hour. It is claimed that the searchlight enables one to read the dial of a watch at a distance of a quarter of a mile.



SIDE VIEW OF ORIENT MOTOR TRICYCLE WITH ASTER MOTOR.

BOLLEE DECORATED

Leon Auguste Antoine Bollee, Chevalier de la Legion d'Honneur.

That is how the maker of the famous French voiturettes is now called. He has just been decorated for his inventions and improvements, not alone in the automobile line, but in the invention and perfection of calculating machines. He is a comparatively young man and it was only in 1894 that he completed his first calculating machine and a year later when his first automobile appeared. Since that time his success has been phenomenal, having reached the goal of all ambitious Frenchmen—the decoration of the Legion of Honor—within six years.

LOZIER COMPANY WILL MOVE

Cleveland, July 2.—E. R. Lozier, general manager of the Lozier Motor Co. of Toledo, who in Cleveland recently denied the report published in Toledo papers a few days ago to the effect that his company had decided to remain in Toledo and was making plans to erect a large plant near the present bicycle factory. Mr. Lozier stated that the company had not altered its determination to secure an Eastern site; in fact negotiations are now under way which will probably be settled in the near future. The Toledo report, he stated, was ridiculous from the fact the launch business demanded a water frontage, whereas the bicycle factory is several miles from water. He said that as soon as the new plant was completed the company would commence developing the automobile end of the business; considerable experimental work having already been done in that line.

Superintendent Burwell now has two gasolene vehicles in operation in Toledo which are said to be entirely satisfactory.

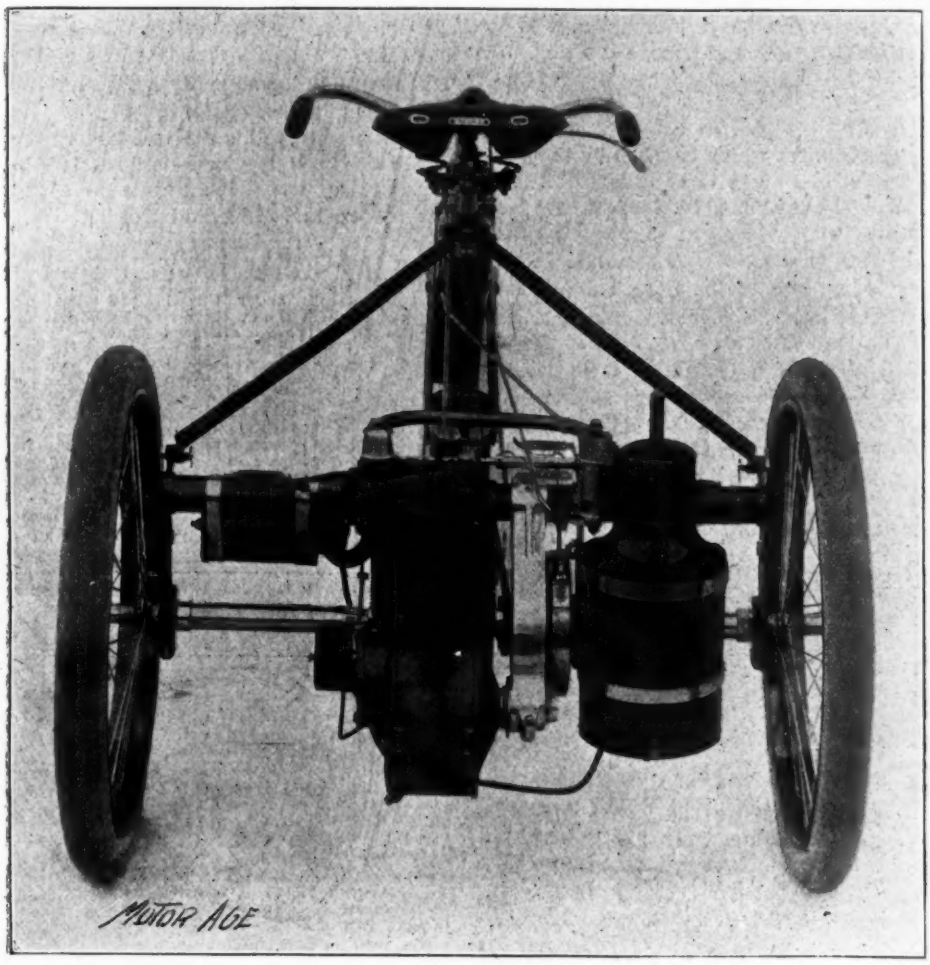
A NEW-OLD CONCERN

For a long time past the Kensington Bicycle Mfg. Co. of Buffalo has been experimenting with electric motor-vehicles, and, within the past year, has been delivering them to customers in commercial quantities. Later on the construction of steam vehicles was undertaken and carriages of this class are now being made.

Within the last few days a new firm has been incorporated, under the name of the Kensington Automobile Mfg. Co., with a capital stock of $600,000. The entire plant of the old bicycle company has been acquired in which the company expects to soon have 500 men at work.

The steam vehicles which the company manufactures has several novel features. Among them is an automatic pump for furnishing pressure to the air tank. In connection with this pump, an auxiliary hose is provided which can be utilized to inflate the tires of the vehicle.

Many of the company's vehicles are already running in Buffalo, where the conditions of the streets make the use of automobiles particularly attractive, as well as in other large cities. The company has made arrangements for a station near Niagara Square, Buffalo, for the



REAR VIEW OF ORIENT MOTOR TRICYCLE WITH ASTER CARBURETER.

charging and care of electric vehicles and has salesrooms at 610 Main street.

The officers of the new company are W. J. Knowles, president; James A. Roberts, vice-president; John J. Gibson, secretary, and Charles G. Shepard, treasurer. In addition to the officers the following are directors: Herbert P. Bissell, Hiram C. Martin and George C. Riley.

ALBUM OF AUTOMOBILE INDUSTRY

The interest which is taken by the government of France in the automobile industry is exemplified in the fact that free transportation is given to "Grand Illustrated Album of the Automobile Industry" of France to the French diplomatic staffs in all the principal countries of the world.

To the acting consul at Chicago, M. Heillmann, The Motor Age is indebted for a copy of the work. It is compiled by MM. Huguet and Minart, of Paris, and is a magnificent folio volume, very freely illustrated with excellent half-tones and printed in the best of style on fine paper. Despite the fact that the volume is principally composed of advertisements of the leading French makers of motor-vehicles, still it contains much information that is of value, and, as a reference book of the trade, is by far the best thing that has yet seen the light of print.

A NEW COLUMBUS CONCERN

Columbus, Ohio, July 2.—The Wells-Meeker Motor Vehicle Co of this city has been incorporated recently with a capital stock of $20,000 by G. W. Meeker, Claud Meeker, F. E. Wells, D. E. Daniels and W. C. Wells.

J. B. Clyne, superintendent and mechanical engineer of the Cleveland Machine Screw Co., Cleveland, sailed for Europe recently. He will transact considerable business in the interests of the company's automobile department, both in England and France, after which he will hie himself to his native heath on the banks of the Ugi, near Peterhead, in Aberdeenshire, where he means to spend the season in lolling and trolling.

MISCELLANEOUS

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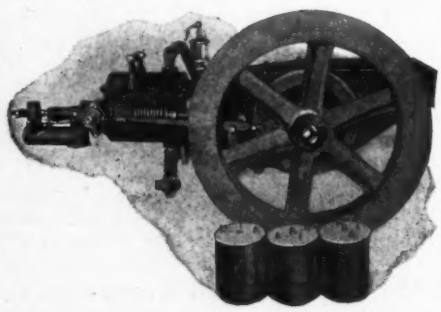

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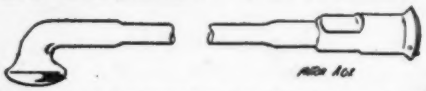

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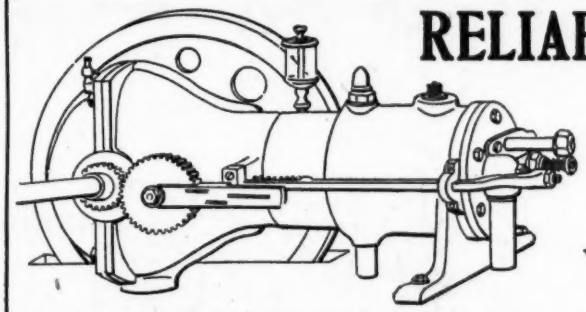

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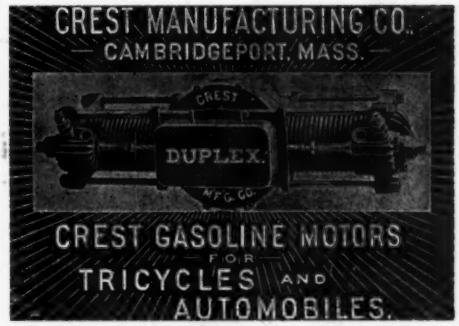

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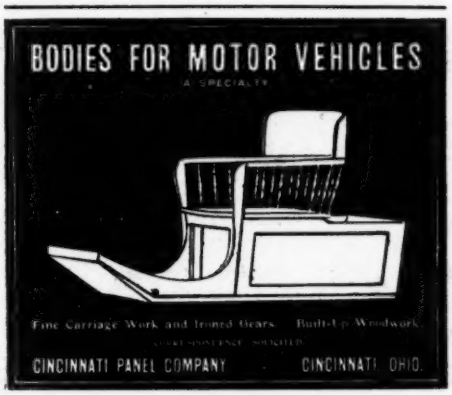

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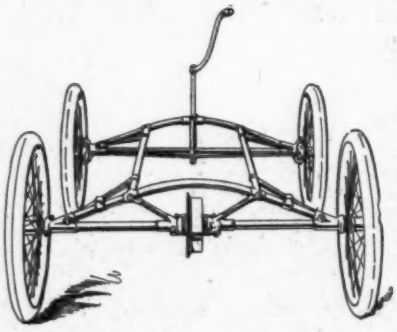

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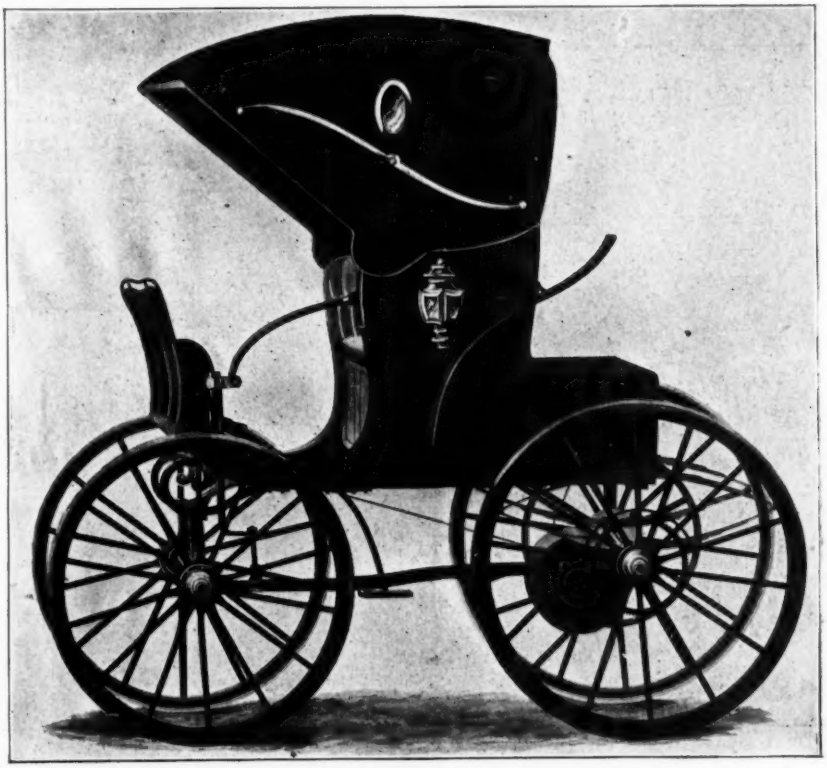

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